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CANADA'S GREEN PLAN

## Working Together: Canada's *Green Plan* in Action

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Canada  
and The Earth  
Summit  
Canada  
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Planète Terre

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# Canada's Green Plan and the UNCED Challenge

**T**he most frequent comment from the astronauts, Canadian, American and Russian, after returning from space is how fragile our home planet appears from afar. Perhaps nothing is more fragile than our environment.

We know that environmental problems have no respect for national boundaries. Acid rain is a joint problem for both Canada and the United States. Some of the pollution in the Arctic comes from other circumpolar countries. And the climate change issue cannot be resolved in Canada alone. To ensure a healthy environment for Canadians we must work together with other countries to secure a healthy global environment.

Sustainable development is at heart an international concept. It is a way of approaching the integration of two systems which operate on a global basis: the economy and the environment. It recognizes that we will increasingly have to work together across international boundaries to achieve environmental as well as developmental goals to meet the legitimate aspirations of much of the world's population. As the scope and complexities of those relationships multiply, we will need the co-operation of a wide range of countries at different stages of development. The challenge is to reconcile the goals, priorities and expectations that we all hold for our economic and environmental development.

The United Nations Conference on Environment and Development (UNCED) will place sustainable development firmly on the international agenda. An important outcome of UNCED will be a global plan of action on a broad range of environmental, social, economic and developmental issues. Even more importantly, it will challenge each country to make sustainable development a practical reality domestically. The global plan for UNCED will be the sum of a multitude of national efforts.

Our domestic contribution to the global plan includes Canada's *Green Plan*. It will also provide resources to address existing and future environmental treaty obligations such as Ozone Depletion and Climate Change. The *Green Plan* complements Canada's effort to assist developing countries through our various aid programs. It is a practical model for achievable sustainable development and one which other countries can follow. Through its implementation, Canadians are making economic development and environmental protection mutually supportive rather than mutually exclusive.

The environment has long been one of Canada's foreign policy priorities. Canada has played a central role in the evolution of the international environmental agenda beginning with the Stockholm Conference of 1972. Our consistently strong support of the United Nations reflects the importance that Canada places on global co-operation to achieve understanding and progress on environmental issues. The *Green Plan* advances this tenet of Canadian foreign policy.

As the Brundtland Commission report stated: Think Globally, Act Locally. Canada is acting at home through its *Green Plan* and globally through assistance to less-developed countries.

Jean J. Charest  
Minister of the Environment



## *Canadians Working Together*

**T**he *Green Plan*, introduced in December 1990, is a comprehensive national strategy and action plan to make sustainable development a reality in Canada. Founded on public consultations, it responds to the environmental concerns of Canadians and aims to secure for current and future generations a safe and healthy environment and a sound and prosperous economy. Through its implementation, the *Green Plan* is a showcase for other countries of what government, industry, environmentalists and individuals can do through partnership to achieve our common goals.

Canada's *Green Plan* is rooted in the knowledge that the environment must be a forethought, not an afterthought, in decision-making. It is an integrated, government-wide effort supported by over 40 federal departments and agencies. Since its introduction, more than 50 programs and initiatives have been put in place.

Canadians want governments to act but they realize that governments alone can't do it all. Indeed, no single government, business, group or individual can meet Canada's environmental challenges alone. The environment is everyone's responsibility. But that responsibility can be met only through co-operative efforts. The *Green Plan* provides the basis for new and stronger partnerships for achieving sustainable development.

Continuing success depends on ongoing co-operation and effective partnerships. Because ultimately it is individual Canadians who will deliver on the *Green Plan's* potential. It is the individual Canadian who is the environmental leader.

That is why it is so important to see Canadians working together — in the north, on the Arctic Environmental Strategy, on the west coast on the Fraser River Management Plan, on the east coast on the Atlantic Coastal Action Plan, and throughout the country — to make sustainable development a practical Canadian reality.

*Pauline Browes*  
Minister of State (Environment)



# Canada's Green Plan Goes Global

The world is caught between powerful converging drives which must somehow be reconciled. Because of population growth and widespread poverty we must develop economically. But development without regard for the environment will eventually undermine the life-support systems which make this planet habitable.

1992 is a major milestone for Canada and for the world. The United Nations Conference on Environment and Development — the Earth Summit — is a result of the work of the World Commission on Environment and Development (better known as the Brundtland Commission). Its goal is to place environmental issues squarely on the world's economic agenda in order to achieve sustainable development on a global basis.

The key issues for UNCED are:

- The Rio Declaration (formerly the Earth Charter) which sets out the principles that provide a moral framework for the integration of the environment and the economy;
- Agenda 21, a blueprint for action for all sectors of society to pursue sustainable development domestically and internationally;
- A Statement of Guiding Principles on Forests, which would serve as a first step towards an international convention on forests and forest management; and
- Framework Conventions on Climate Change and Biodiversity.

Canada has been a leader in the UNCED process from its beginning. We were one of the original sponsors of the United Nations resolution that established it, and have fielded one of the most active delegations for its preparations. Our involvement and interest is equalled in few other countries.

• Provincial and Territorial governments, through the Canadian Council of Ministers of the Environment, the National Round Table on the Environment and the Economy, the International Institute for Sustainable Development and other bodies concerned with environmental and developmental issues have been actively involved in Canada's preparations.

- The Canadian business community has co-ordinated its participation through the Canadian chapter of the International Chamber of Commerce. The President and CEO of TransAlta Utilities and the CEO of Northern Telecom are members of the International Business Council for Sustainable Development established to advise the United Nations Conference secretariat.

- Canadian non-governmental groups representing a wide range of interests established an umbrella committee, the Canadian Participatory Committee for UNCED, to mobilize their involvement.

- And Canadian indigenous groups have focused on the Conference as a major opportunity to build links with other indigenous people to project their interests in a global context.

Canada is playing a role in the Summit out of all proportion to our population. But our national contribution starts at home. In December 1990 Canada launched the *Green Plan*. It is one of the most ambitious drives for sustainable development mounted by any country.

The *Green Plan* is the framework for Canada's participation in UNCED, overall and on specific issues like climate change, the fishery and forests. The *Green Plan* is Canadian. But its impact is global. Progress or setbacks in one country affect all the others. Through implementation of the *Green Plan*, Canada is providing a model for other countries to follow in developing their own strategies and action plans that harmonize environmental protection and economic growth, in other words, sustainable development.

For more information on UNCED, please contact:

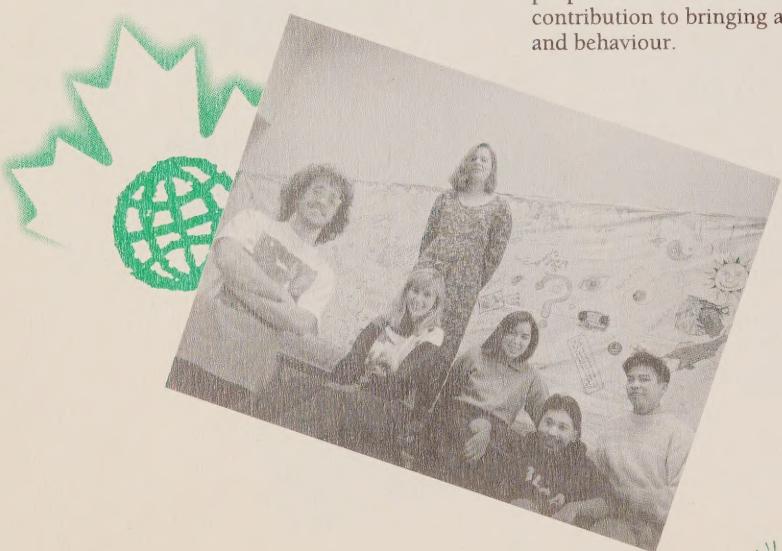
UNCED National Secretariat  
Environment Canada  
10 Wellington Street  
Hull, Québec K1A 0H3



**Canada  
and The Earth  
Summit**



# Canadian Youth Prepare for UNCED



**F**rom August 18 to 25 of 1991, approximately 100 young people from across Canada met in the little village of Pointe-de-l'Église, Nova Scotia. They came to discuss and develop positions on environmental and developmental issues of most concern to Canadian youth, as well as to articulate a Canadian youth commitment to work for positive social change. They were also there to lay out a youth action plan which the participants could take back to share with young people in their communities.

These young people had been selected by their peers to represent their respective regions at workshops held during the summer of 1991 in Rouyn-Noranda, Québec; Paris, Ontario; Gimli, Manitoba; Rocky View, Alberta; Memramcook, New Brunswick; and Rankin Inlet, Northwest Territories. Each workshop focused on discussions of regional concerns, but also included an educational dimension aimed at providing young people with the skills necessary to make a positive contribution to bringing about changes in attitude and behaviour.

These meetings provided young Canadians, from a diversity of regional and cultural backgrounds, with an unprecedented opportunity to share experiences, perceptions and aspirations. More importantly, however, the meetings provided them with a unique opportunity to make a vital and valuable contribution to the most important international conference on the environment which has ever taken place. The United Nations Conference on Environment and Development (UNCED) or the Earth Summit in Brazil is the largest heads-of-state meeting ever held. Canada's *Green Plan* articulated a special commitment to involve Canadian youth in this event and made available to Canadian youth funds to establish a Youth Secretariat which would co-ordinate their participation.

Not only were Canadian youth able to engineer a successful national consultation process geared to this important conference, they also demonstrated international leadership in co-ordinating world youth participation through the organization, in co-operation with Costa Rican youth, of the World Youth Preparatory Meeting which took place March 22 to 29 in San José, Costa Rica.

Chosen to represent their regions and their country at these international events were François Meloche, a 19-year-old from Montréal, Québec; Erin Hannah a, 17-year-old from Uxbridge, Ontario; John Cadigal, a 23-year-old from Winnipeg, Manitoba; Karen Snowshoe, a 23-year-old from Vancouver, British Columbia; Lisa Mitchell, a 25-year-old from Halifax, Nova Scotia; and Pitse Pfeifer a, 23-year-old from Iqualuit.

For more information on this youth initiative, please contact:

Youth Program  
Environment Canada  
10 Wellington Street  
Hull, Québec K1A 0H3



# Community Action In Atlantic Canada

Stephen Hawboldt of Annapolis Royal, Nova Scotia, Michael Richard of Saint John, New Brunswick, Mary Lynn Arsenault of Bedeque Bay, Prince Edward Island, and Sean Dolter of Humber Arm, Newfoundland, all have something in common: they are community members working with governments and others to improve and restore their harbours and coastal areas.

The four communities are among the 13 in the four Atlantic provinces targeted for special action under the Atlantic Coastal Action Program (ACAP), a *Green Plan* initiative put in place to develop "blueprints" for managing the coastal resources in the region. These projects are organized and run at the local level.

Stephen Hawboldt and other members of the Clean Annapolis River Project (CARP) are holding "kitchen table" workshops in area homes which will allow residents to suggest solutions to the watershed's environmental problems and also to suggest how the area should be used in the future.

In Saint John, Michael Richard and 30 other residents have, through public meetings, begun the work necessary to develop a comprehensive environmental management plan for the Saint John harbour and the surrounding coastal area.

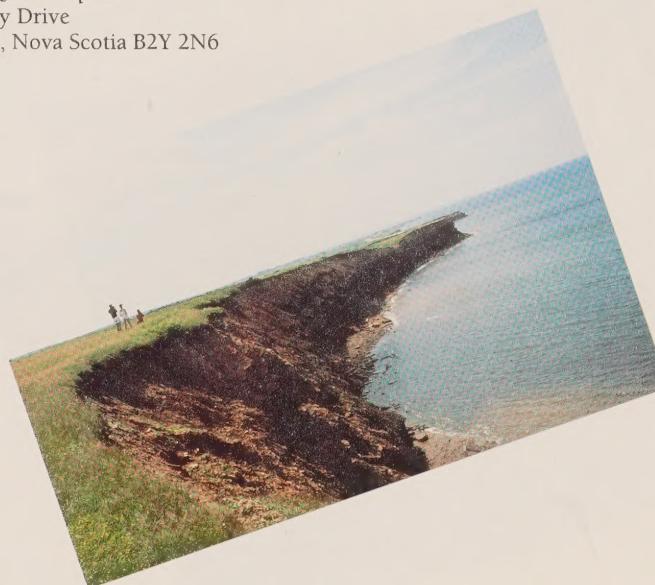
Mary Lynn Arsenault of Bedeque Bay, Prince Edward Island, and her colleagues are developing a "vision" for the future use of the watershed, co-ordinating environmental monitoring and assessment efforts and identifying additional partners and funding sources. Area residents are excited at the prospect of a cleaner environment and jobs in the environmental field.

In the Humber Arm area of Newfoundland, Sean Dolter and representatives from the area's pulp and paper company, the local cement plant, city officials, yacht club members and scuba divers have formed the Humber Arm Environmental Association Inc. to jointly solve their area's environmental problems.

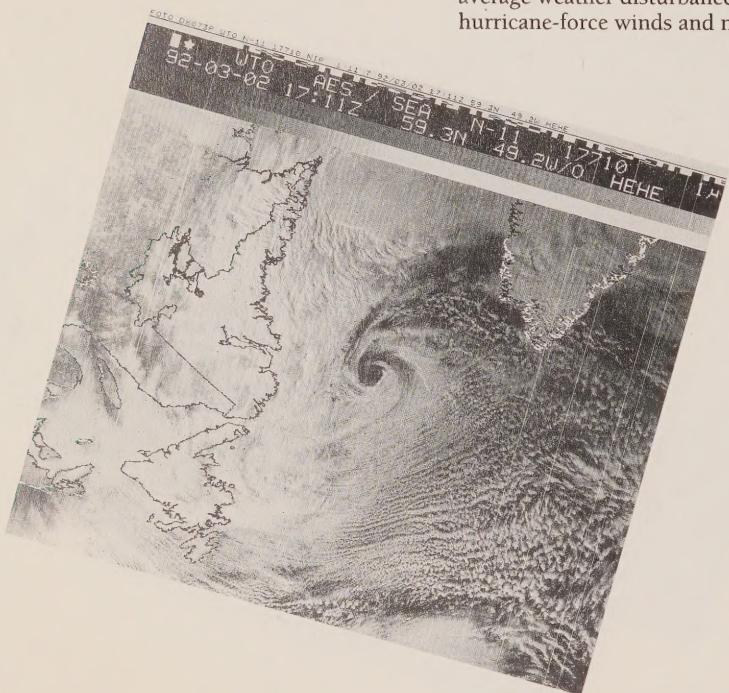
Implementation of the Atlantic Coastal Action Program also supports Canadian goals at the Earth Summit. Agenda 21 calls for integrated coastal and marine management and sustainable development plans.

For more information on the Atlantic Coastal Action Program please contact:

The ACAP Coordinator  
Environment Canada  
4th floor, Queen Square  
45 Alderney Drive  
Dartmouth, Nova Scotia B2Y 2N6



# Predicting Severe Storms



**N**ewfoundland meteorologist Art Earle knows the danger that exists from sudden winter storms that seem to spring up from nowhere. One such storm was responsible for the sinking of the "Ocean Ranger" oil rig on the Grand Banks in 1982.

Art and others in his field understand that low pressure systems often develop in the area south of the Atlantic Provinces where cold "Canadian" air masses come in contact with moisture-laden, warm air masses from the south. Feeding on the energy stored in the warm waters of the Gulf Stream, some of those low-pressure systems can, in a period of 12 hours, be transformed from an average weather disturbance to a storm producing hurricane-force winds and nine-metre waves.

Conventional weather forecasting, satellites and high-speed computers are all used to predict severe weather storms over the oceans. But these methods still leave questions about the storms and their impact unanswered. To find the answers, Art Earle and researchers from universities, other government departments, the United States, Britain and Japan undertook a month-long field study early in 1992.

The field study, entitled the Canadian Atlantic Storms Program, Phase II (CASP II) is part of the Environmental Emergencies: Prediction and Warming initiative under the *Green Plan*.

The researchers examined 16 storms over Newfoundland and the surrounding Atlantic ocean in great detail. With nearly 40 aircraft missions conducted into blizzards, cold and warm fronts, freezing rain and high winds, they gathered data which will contribute to an improved understanding of atmospheric-ocean interaction, sea ice, ocean currents and fish populations.

Field studies such as CASP II are a good example of international and business-government co-operation in the pursuit of environmental knowledge. These studies also support Canada's negotiating mandate at the Earth Summit. Agenda 21 calls on countries to have the capability to predict atmospheric changes and fluctuations and to assess the resulting environmental consequences and socio-economic impacts.

For more information on CASP II and the Emergencies Prediction and Warming initiative, please contact:

Atmospheric Environment Service  
Environment Canada  
1440 Bedford Highway  
Bedford, Nova Scotia B4A 1E5



## Preserving Canada's History

**F**or more than 500 years there has been commercial fishing off Canada's East Coast. Today, like the fish stock itself, heritage sites associated with this famous industry are in danger of disappearing.

That's why Canada's *Green Plan* promotes the preservation and commemoration of key historic sites. In late 1991, the people of Newfoundland and Labrador learned that two national historic sites associated with the Atlantic fishery — one at Red Bay, Labrador, and the other at Bonavista, Newfoundland — would be developed.

Every summer, from the mid-1500s until about 1620, Basque merchants in France and Spain sent regular expeditions to the Labrador coast to hunt whales. At the height of the industry's prosperity, as many as 1,000 people may have worked at Red Bay hunting whales, making barrels and operating the ovens that rendered the whale oil. Red Bay was the "oil patch" of its day, providing oil to light the courts of Europe.

The remains of the Basque shore stations and seven Basque vessels have been found. The galleons sunk at Red Bay are of international significance. Other than King Henry VIII's flagship, the *Mary Rose*, they constitute the only substantial remains of the 16th century sea-going vessels anywhere in the world.

One of the few 19th century fish company complexes still existing in Newfoundland is found at Bonavista, on the northern tip of the Bonavista Peninsula on the island of Newfoundland.

From the "Ryan Premises" in this small fishing village, salt fish was exported all over the world. Wholesale and retail stores sold a wide variety of products from groceries to furniture up and down the coast of Newfoundland and Labrador. Nineteenth century wood-frame structures still standing include four commercial buildings, the Ryan family home and a carriage shed.

For more information about Canada's system of national historic areas in Newfoundland and Labrador, please contact the Canadian Parks Service in:

St. John's, Newfoundland  
P.O. Box 5879  
A1C 5X4  
or  
25 Eddy Street  
Hull, Québec K1A 0H3



# Protecting Forest Biological Diversity



**I**n the balsam fir forests of Newfoundland's west coast, Forestry Canada scientists are doing research to develop computer models that will help manage forests for multiple uses. Through the *Green Plan*, we are shifting forest management from sustainable yield to sustainable development. We are also maintaining the health and diversity of Canada's wildlife and plants.

In the past, Canadian forests were managed mainly for wood production. It is becoming increasingly clear, however, that we also have an obligation to maintain the biological diversity of forests for the benefit of future generations. Forest managers are looking for tools that will make the task of managing forests for multiple uses easier. One such tool involves forest ecosystem classification systems already established across Canada.

These systems, which are based on forest features and on climate are a good indication of the ecology of an area, and can be used to predict the numbers and types of animals it shelters. Researchers in Newfoundland are working in co-operation with the Geography Department at Memorial University to develop a technique that will quickly map forest ecosystem features using images from a Landsat satellite. They will also look at different species or groups of species (such as caribou, moose, and songbirds) to identify animal associations in different types of forest ecosystems.

At the end of the research program, scientists expect to be able to make predictions of biological diversity and wood volumes in different areas by using classification systems. It is also

expected that computer models based on the Landsat satellite ecosystem maps will then be used to plan the sustainable development of forests in Newfoundland.

To promote understanding and maintenance of the genetic component of biological diversity in Canada's forests, and to support similar initiatives in other parts of the world, a National Forest Genetic Resources Centre has also been established at the Petawawa National Forestry Institute, near Chalk River, Ontario.

The need to maintain or even improve the biodiversity of Canada's forests is essential in developing fully sustainable and environmentally acceptable forest management systems and practices. Strategies to effectively meet this challenge must be based on a good understanding of such issues as the effect of current and proposed forestry practices on the genetic component of biodiversity, the current extent and diversity of Canada's forest genetic resources, and methods for conservation of genetic resources and their diversity.

Canada's sustainable forestry activities also support the Agenda 21 negotiations for the Earth Summit. Countries are being urged to develop and integrate national strategies for the conservation of biological diversity and the sustainable use of our resources.

For more information, please contact:  
Forestry Canada  
Newfoundland and Labrador Region  
Building 304, Pleasantville  
P.O. Box 6028  
St. John's, Newfoundland A1C 5C8

Forestry Canada  
Petawawa National Forestry Institute  
P.O. Box 2000  
Chalk River, Ontario K0J 1J0



# Ship-to-Shore Trash Campaign

Not long ago, along the southeastern shore of New Brunswick, garbage was a familiar sight on the shoreline. Ropes, fishing nets, "six-pack" rings and other plastic debris were tossed overboard and left in the water. Thanks to the "Ship-to-Shore" program, launched by the Maritime Fishermen's Union and Environment Canada's Environmental Partners Fund, the garbage is now being brought ashore.

Prior to the campaign, an average of only 720 kilograms of refuse per week was returned to wharves along the southern shore of the province. Now, an average of 9,500 kilograms of garbage is brought ashore each week. In fact, the program was so successful that wharves in the area were not equipped to handle the sudden increase in trash and arrangements had to be made with local authorities to upgrade disposal services.

Debris tossed into the ocean can have a devastating effect on marine life. Ropes and nets also pose safety risks when they block water intakes in boats and get tangled in propellers. That's why fishermen decided to band together to bag their trash, clean up wharves and promote the program among themselves.

Getting the message out to fishermen was a community effort as well. School children participated in a contest to design a poster for the program. A film production company provided technical services to produce a series of advertisements, and radio and television stations provided free air time to broadcast them. On land and at sea, fishermen were constantly reminded not to "teach their trash to swim".

Canada's *Green Plan* also has a part to play in reducing not only plastic debris in our oceans but other pollutants. The Ocean Dumping Control Action Plan includes improved regulations under the Canadian Environmental Protection Act, enhanced surveillance and a national research and information program to reduce persistent plastics.

The Ocean Dumping Control Action Plan and the "Ship-to-Shore Trash Campaign" support Canada's Agenda 21 stand at the Earth Summit. Agenda 21 calls on countries to establish facilities for the collection of garbage from ships with special attention to the establishment of smaller scale facilities in marinas and fishing harbours.

For more information on the Environmental Partners Fund in Atlantic Canada and on the Ocean Dumping Control Action Plan please contact:

Environmental Partners Fund  
8th floor, Queen Square  
45 Alderney Drive  
Dartmouth, Nova Scotia B2Y 2N6

Ocean Dumping Control Action Plan  
Environment Canada  
5th floor, Queen Square  
45 Alderney Drive  
Dartmouth, Nova Scotia B2Y 2N6



# **Pollution Prevention on the St. Lawrence River**



**A**s in the Great Lakes basin, users of the St. Lawrence River in Québec are putting together an overall prevention plan focusing on all sources of pollution of the river. Based on voluntary participation of industry and individuals, this *Green Plan* initiative has three components: strategies, education and demonstration.

The Pollution Prevention initiative also builds on work currently underway, under the St. Lawrence Action Plan, to reduce pollution discharges from 50 priority industries along the St. Lawrence.

In developing local prevention strategies, the river is divided into 23 sections, called zones of priority interest. Over the next several years, each zone — which covers the river between Cornwall and the Gulf of St. Lawrence — will be studied, and recommendations on actions to be taken by all stakeholders will be made.

At one test zone in the Lac Saint-Pierre sector of the river, the federal and provincial governments collected scientific data on the pollution problems in the sector and jointly produced an integrated diagnosis of the area. That data, together with consultations organized by the Union québécoise pour la conservation de la nature (UQCN) with industries, environmentalists and municipalities, led to an agreed upon list of priorities for action. The approach developed at this test zone is ready to be used at other sites along the river.

The education component is designed to educate the public and increase its awareness of the impact of daily activities on the quality of the river's environment. Under this objective, a computer program, showing the sensitive areas of the shoreline is being developed so that shippers and others know the priority areas for clean-up in the event of an oil spill.

Finally, under the demonstration component, a pollution prevention technology program, spearheaded and funded in part by the Centre Saint-Laurent in Montréal is being developed. The project will be carried out by the F.F. Soucy paper mill in Rivière-du-Loup together with the consulting firm Beak Ltd. Its objective is to implement clean manufacturing technologies aimed at reducing and eliminating effluent discharges by the plant.

For further information on pollution prevention initiatives on the St. Lawrence River and on the St. Lawrence Action Plan, Please contact:

Environment Canada  
1141 Rue de L'Église  
Ste-Foy, Québec G1V 4H5



# Explaining Measures to Curb the Illegal Trade in Endangered Species

**W**hen Réjean Gagnon and Richard

Charette learned that Canada's Green Plan calls for new legislation to deter poaching and illegal trading in wild animals and plants, they knew they could contribute to that important objective. Réjean is the Director General of the Collège de Baie-Comeau, Québec, and Richard is a biology teacher there with a special interest in training enforcement officers.

This federal legislative initiative, Bill C-42, recognizes that poachers and smugglers have no respect for nature, and that a partnership approach is the only way to effectively combat the problem. Thus, it was natural and inevitable that Réjean and Richard became the first partners in the Bill C-42 program.

A key objective of the Act is the implementation of the Convention on International Trade in Endangered Species (CITES). However, one of the practical difficulties in implementing the Convention is identification of the more than 30,000 species and sub-species and their parts, and products which are controlled by it. When one considers that customs officers and other enforcement people have numerous laws to administer and do not have a technical background, the identification problem would seem insurmountable.

In the first partnership under Bill C-42, the Collège de Baie-Comeau and the department's Canadian Wildlife Service are collaborating in the development of a guide which will help enforcement officers to identify specimens in trade.

Importantly, the partnership extends beyond the borders of Canada and recognizes the international dimensions of the poaching problem. The guide will be field tested during the summer of 1992 by European Economic Community Customs officers, United States Fish and Wildlife Service inspectors and by officers of Canada Customs, the Royal Canadian Mounted Police and Agriculture Canada.

Richard designed a prototype of the guide, making extensive use of graphics with limited text, to ensure that the guide can be used with minimal training. The guide is intended for international use and, as CITES operates in three languages (French, English and Spanish), minimal text reduces translation problems and will encourage use of the guide in many countries.

For more information on the Wild Animal and Plant Protection Act, please contact:

Canadian Wildlife Service  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



# Land-Based Environmental Emergencies



**C**laude Rivet of Environment Canada is a member of a very important team. When a mountain of used tires burned at St-Amable, Québec, in May 1990, he was one of the members of a Regional Environmental Emergency Team that was sent to provide technical advice and support to the firefighters who responded to the blaze. Over 3,000,000 used tires burned, leaving behind contaminated soil and water.

The St. Amable accident could have been extremely serious. But thanks to proper training and planning by federal, provincial and local officials, the response to the emergency was immediate and effective. The blaze was extinguished in less than four days. No serious injuries occurred and property damage was minimal.

Reducing future environmental emergencies and responding with well-trained teams, wherever accidents occur in Canada, is the goal behind the *Green Plan's* Hazardous Spills Prevention and Response Program. Environment Canada, through its network of emergency teams, weather service and a national emergency technology centre, provides technical advice, information and support to the on-site responders, the local community and local government authorities during and after the emergency.

Business, labour and non-governmental organizations are active players with governments. This partnership is seen through the Major Industrial Accidents Council of Canada (MIACC), which links the efforts of industry and government in spill prevention, emergency preparedness and response as well as public education.

Mark Egener, chairman of MIACC, believes the partnership is working well. The co-operative development efforts result in national standards and guidelines on a wide range of prevention, preparedness and response issues. As well, through conferences, workshops, meetings and publications, MIACC facilitates an exchange of latest information and "lessons learned" on hazardous substances accidents. Providing a neutral forum for government and industry communication on hazardous substances, MIACC makes submissions on Canadian government initiatives, and also has input to international efforts.

For more information on the Hazardous Spills Prevention and Response initiative, please contact:

National Environmental Emergency Centre  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3

For information on MIACC, please contact:  
Major Industrial Accidents Council of Canada  
265 Carling Avenue  
Ottawa, Ontario K1S 2E1



# Protecting Important Forest Habitats

**R**esearchers from Forestry Canada, provincial agencies, independent wildlife organizations, forestry companies and Laval University are looking at different ways of protecting forest wildlife habitats near riverbanks, streams and lakeshores.

These narrow bands of land are home to many different birds and animals and represent a good proportion of Québec's productive forests. Researchers are concerned that intensive forestry practices might affect the survival of wildlife and the health of trees in those areas.

The experiment began in 1989 in balsam fir stands in the Montmorency Forest about 60 kilometres north of Québec City. Different tree-cutting techniques were used along a medium-sized river. In some areas all trees were removed, while in others strips of trees of various widths were left either totally untouched or with some of their trees removed (thinned).

In the first year following cutting, birds became crowded in the narrowest strips; their numbers dropping in the second year. Thinned strips also showed decreasing bird populations. The number of small mammals, however, was not affected by strip width or thinning.

Researchers will observe the return of marked birds to the strips every year. They will also evaluate the effect of cutting practices on the appearance and overall health of trees.

These studies will be particularly useful in the design of forest areas managed for both wood production and wildlife habitat. And that supports the *Green Plan*'s objective of shifting forestry management from sustainable yield to sustainable development.

Forestry Canada's program also supports the Earth Summit agenda, which calls on countries to implement environmentally sound silvicultural practices in relation to other plant and animal species.

For more information, please contact:  
Forestry Canada  
Québec Region  
1055, rue du P.E.P.S  
P.O. Box 3800  
Ste-Foy, Québec G1V 4C7



## Networking to Find Solutions to the Problem of Toxics



**V**itamin A means more to Dr. Philip Spear than it does to most of us. He certainly gets his daily dose of the vitamin, but not in the way most of us would assume.

Philip spends the better part of his day studying vitamin A in the livers of sturgeon, the egg yolks of herons and the blood of whales.

Why vitamin A? Vitamin A is an early-warning signal of such harmful effects as reproductive failure in birds, birth defects in sturgeons and the decline of the beluga whale population in the St. Lawrence River.

Philip is part of the research team at the Centre inter-universitaire de recherche en toxicologie (CIRTOX) of the Université de Québec

à Montréal and the Université de Montréal. Its main focus is the biological monitoring of living organisms as an indicator of the health of the environment. He will also be working closely with the Centre Saint-Laurent, Environment Canada's research lab in Montréal, and the Canadian Wildlife Service. The results of his studies will contribute to the overall plan to clean up the St. Lawrence River.

Now, thanks to the Toxicology Network, part of the *Green Plan*'s series of initiatives under Keeping Toxics Out of the Environment, Philip and his colleagues will be able to share their findings with other scientists across Canada.

The network is made up of the University of Guelph in Ontario, the University of Saskatchewan in Saskatoon and CIRTOX and will link these research centres with other centres across Canada.

Researchers are taking a special interest in Canada's Toxicology Network. In March, 75 toxicologists from across Canada and a panel of international experts met to determine the best way to improve the Canadian public's understanding of the risks posed by toxic chemicals and how to pull together their expertise and work towards common goals.

Canadian action on toxics includes speeding up the health and environmental assessment of persistent toxic substances and research into the effects of toxic chemicals. The Canadian action plan is also a model for countries attending the Earth Summit.

For more information on the Toxicology Network and the Government of Canada's program to Keep Toxics Out of the Environment, please contact:

Environmental Protection Directorate  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



## Progress on Acid Rain

**C**anada's long battle to reduce acid-rain-causing emissions isn't won yet, but domestic and international efforts are paying off. In Québec, reductions of more than 60% in sulphur dioxide ( $\text{SO}_2$ ) emissions have been achieved. In Ontario, the same levels of reductions have been seen. And in Nova Scotia and Newfoundland, lakes are being restored.

The reductions in emissions are due to new regulations put in force in the mid-1980s, improvements in industrial processes, the switch to natural gas from heavy fuel oil and a recognition from industry that it is part of the solution.

As mentioned, the reductions have also had an impact on lakes in Nova Scotia and Newfoundland. An eight-year study shows that the pH levels of the lakes, which is a measure of acidity, have improved.

These improvements come about because of a concerted effort, first in Canada and now in the United States, to implement measures which reduce trans-boundary air pollution.

The Canada-United States Air Quality Agreement, signed by Prime Minister Mulroney and President Bush in 1991, commits both governments to cap  $\text{SO}_2$  emissions and reduce emissions of nitrogen oxides (one of the components of urban smog) from factories, power plants and new cars. The overall objective is to protect both countries' pristine wilderness areas from trans-boundary air pollution.

In addition to the emission reductions, the federal and provincial governments in Manitoba, Ontario, Québec and the Atlantic Provinces are working to ensure power utilities are equipped with new pollution-abatement technology.

The federal government is also pursuing new federal-provincial agreements to honour the Canada-United States Air Quality Agreement through Canada's *Green Plan*. In New Brunswick, the first province to sign an amended agreement, New Brunswick Power is installing new desulphurization technology at two of its thermal power generating stations. This action will demonstrate to the United States, and to other provinces, that New Brunswick is doing its share to bring cleaner air to Canadians and New Englanders.

For more information on Canada's Acid Rain Reduction Program, please contact:

Acid Rain Program  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



# Digging Into Our Garbage to Learn Lessons for the Future



**D**r. William Rathje likes to poke around landfills, searching among the piles of garbage to see what people throw away. He's the Director of the University of Arizona's Garbage Project, and in 1991 he came to the Greater Toronto area. He has previously performed 11 archaeological digs throughout the United States to determine landfill composition and other technical data.

Working with William to learn more about the garbage we throw out were people from the federal and Ontario environment departments, the regional municipalities of Halton and Metro-Toronto, Pollution Probe and other environmental groups, the Canadian Pulp and Paper Association, the Grocery Products Manufacturers of Canada, Dofasco Steel, McDonald's Restaurants of Canada and other private sector companies.

Although the results are still being analyzed, the Toronto dig produced some interesting preliminary information. For example, the percentages of newspaper and glass in landfills have decreased with the introduction of Ontario's Blue Box Recycling Programs. The Blue Box is a curb-side collection system for recyclable household solid waste. Similar programs are also carried out in other provinces.

In addition, the dig provided evidence that the contents of our landfills do not exactly fit the perception held by most people; for example, that landfills are filled primarily with plastics and fast-food packaging. The findings suggest that construction and demolition wastes make up a significant portion of the land contents.

This finding about construction waste supports the ongoing program of Canada Mortgage and Housing Corporation and construction contractors to reduce, reuse and recycle such wastes from building sites.

When finalized, the information on waste composition in the landfills and other technical data will be used in developing programs to meet the national goal of reducing waste by 50% by the year 2000. The dig is also an excellent example of the partnerships among industries, universities, governments and environmental groups in the ongoing drive to learn more about the waste we generate, so that proper solutions can be implemented.

For more information on the archaeological dig and on the National Waste Reduction Strategy, please contact:

Office of Waste Management  
Environment Canada  
Hull, Québec K1A 0H3



# Challenge to Reduce Construction Waste

There is little doubt that construction waste has become a problem in almost every area of the country. Bans and restrictions on the disposal of certain types of materials including wood, recyclable metal, old corrugated cardboard, new drywall and appliances are being considered all the time.

Canada Mortgage and Housing Corporation (CMHC), with the active participation of builders and renovators, issued the Construction Waste Reduction Challenge to 31 communities across Canada. The "challenge" to builders was to implement the three "R's" of waste management: Reduction, Reuse and Recycling.

The building industry is responding by reducing waste at source; reusing what would normally be landfilled; and recycling materials for which there is no immediate use. In three cities in particular, CMHC and builders responded with specific programs.

In Ontario the Toronto Home Builders Association implemented a series of pro-active measures, including developing a handbook for renovators on reducing renovation site waste, an accompanying video, and a course designed to increase awareness of the problem. Several renovation demonstration projects were also undertaken.

In Vancouver, the British Columbia Home Builders Association developed alternatives to landfilling. At each project site, the waste leaving the site was monitored for the total produced and the total diverted from landfill disposal. On the sites where comprehensive management took place, 70 to 90 % of the waste stream was diverted from the landfill.

In Montréal the Association provinciale des constructeurs d'habitation du Québec adopted measures similar to those of their Toronto and Vancouver counterparts.

The "challenge" and the response to it by builders complements Canada's *Green Plan* goal of reducing waste by 50% by the year 2000 and also the Advanced Home Program from Energy, Mines and Resources.

For more information on the CMHC Residential Construction Waste Reduction Program, please contact:

Canada Mortgage and Housing Corporation  
Innovation Division  
700 Montréal Road  
Ottawa, Ontario K1A 0P7



# Shopping Green With the Help of the EcoLogo



**B**efore qualifying to carry the Environmental Choice Program's symbol of certification, PNG Globe Envelopes of Etobicoke, Ontario was manufacturing approximately 3% of its envelopes from recycled paper. Since certification with the EcoLogo in December 1990, recycled envelope sales have jumped to account for a crucial 60% of PNG's business.

PNG Globe Envelopes is one of more than 120 companies that have earned the right to display the coveted EcoLogo — three doves intertwined to form a maple leaf — on some 650 products. The Environmental Choice Program was established in 1988 by the Government of Canada

to give consumers the opportunity to choose products that are truly less harmful to the environment. Faced with a dizzying array of "green" products, Canadians needed a credible source of environmental information and a symbol they could trust.

The guidelines are drawn up by a 16-member board of independent volunteers who have broad experience in consumer and environmental issues and are vigorously committed to the well-being of the environment. The approval process may involve up to 100 individuals including experts from industry, the environmental community, government, universities and technical and scientific advisers. The public is notified and allowed to comment before a guideline is adopted.

To qualify for the EcoLogo, companies voluntarily submit their goods for scrutiny, pay for inspection and testing, and pay a yearly fee based on sales. Products covered range from cloth diapers, which decrease by 250,000 tons, the amount of disposable diapers sent to Canadian landfills each year, to ethanol-blended gasoline, which reduces the consumption of a non-renewable fossil fuel.

Canada's Green Plan is helping the program to grow. There are many more categories under review, including automatic dishwashing detergent, dry cleaning products and products made from scrap tires.

For more information please contact:  
The Environmental Choice Program  
Environment Canada  
107 Sparks Street  
Ottawa, Ontario K1A 0H3



# Project Eagle

The scientific evidence of toxic chemicals in the Great Lakes has brought a new program to native communities. That program recognizes that aboriginal people, because of their high consumption of fish and wildlife, are more likely to be exposed to contaminants in the environment than is the general population.

The Effects on Aboriginal peoples from the Great Lakes Environment (EAGLE) project is a community-based epidemiological study of the effects of environmental contaminants on the health of native people in the Great Lakes region. An epidemiological study looks at the occurrence and causes of disease in humans.

Project EAGLE is one of the 15 initiatives under the *Green Plan's* Action Plan on Health and the Environment from National Health and Welfare, and is being run in partnership with the Assembly of First Nations.

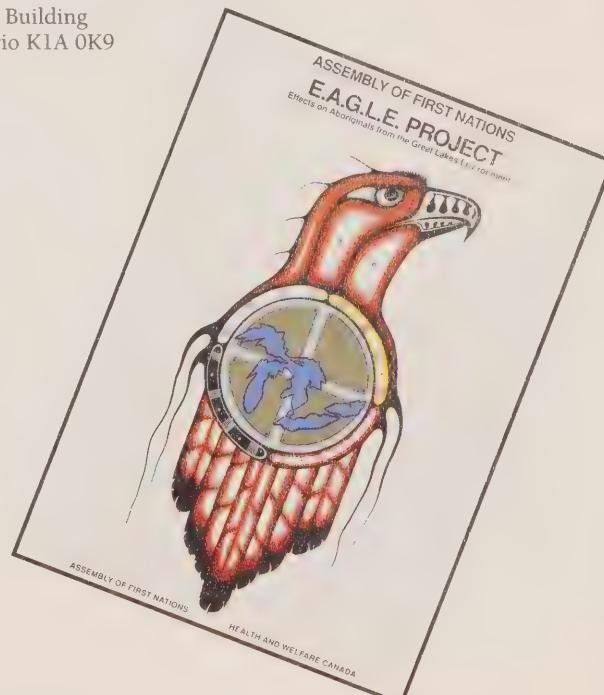
All 63 aboriginal communities in the Great Lakes basin are involved in the study. The community-based study takes the approach of blending scientific and technical research with the traditional ecological knowledge and needs of the aboriginal communities.

To date, Project EAGLE has reviewed the scientific data and established the parameters that will govern the epidemiological study. During the summer of 1992, a systematic analysis of fish and game will be undertaken in all communities. In later stages, the project will look at the effects of contaminants on traditional ways of life, culture, values and other "indirect" health impacts.

Project EAGLE complements several other *Green Plan* initiatives in the Great Lakes basin being undertaken by Environment Canada and Fisheries and Oceans. As well, it supports Canadian efforts at the Earth Summit. Countries are being asked to work with native communities to understand the aboriginal people's knowledge and management experience related to the environment and to integrate this information into health systems.

For more information on the Action Plan on Health and the Environment, please contact:

Health and Welfare Canada  
Communications Directorate  
Jeanne-Mance Building  
Ottawa, Ontario K1A 0K9



# Bringing Water and Sewers to Indian Reserves



**A**lmost all of the 456 members of the Rama First Nation in south-central Ontario can now turn on the taps in their homes and have clean drinking water. But there have been more benefits from Rama's project than just this most obvious one.

The project, under the *Green Plan*'s Indian Health and Water Initiative from Indian and Northern Affairs Canada and National Health and Welfare, has also contributed to the improved economic prospects in the community. It is boosting tourism and other local industries as well as making the area more attractive for investment. Band members have gained new skills and employment; more and better housing is available; and homes are now better protected from the threat of fire.

The need for a new water supply system was recognized in 1989 following tests which showed chemical and bacterial contamination of the drinking water. The new system draws water from Lake Couchiching, the Rama First Nation's traditional water source. A new treatment plant purifies the water, and up to 820,000 litres per day are distributed through the reserve.

The lack of safe water and adequate sewage is one of the more urgent environmental problems for Indian communities. Under the *Green Plan*, 125 bands across Canada will benefit from the initiative to improve water and sewage services, monitor water quality and train band residents in water treatment.

For more information on the Indian Health and Water Initiative, please contact:

Indian and Northern Affairs Canada  
Les Terrasses de la Chaudière  
10 Wellington Street  
Ottawa, Ontario K1A 0H4



# Cleaning Up the Great Lakes

**T**raditionally, the focus in environmental protection has been on treating pollution at the "end of the pipe". However, pollution prevention — reducing pollution at source, before it starts — is increasingly being seen as an overall strategy to protect water quality.

Communities like Thunder Bay, industries such as the automotive sector and governments at all levels are helping to make this approach a reality in the Great Lakes basin. Peter Henderson, representing the Centre for Entertainment and the Environment, is a member of a local advisory group that will help run the new Great Lakes Centre in Sarnia, Ontario, with the aim of bringing the pollution prevention message to citizens of the basin.

The Centre, set up under the *Green Plan's* Pollution Prevention Initiative, will eventually operate at "arm's length" from government and will serve as a focal point for education, technology transfer and information exchange among citizens' groups, environmental organizations, industry and governments.

Another component of the Pollution Prevention Initiative is the development of community action plans for Metropolitan Toronto, Port Hope and Elora. Some 25 other municipalities across Ontario are expected to begin creating their own action plans in the near future.

Canada is also working with the United States on a binational Pollution Prevention Program to restore and protect Lake Superior, and to meet the challenge of the International Joint Commission for a zero discharge demonstration zone. A Canada-United States Public Advisory Forum has been established to address the actions proposed in the Program.

Canadian programs to promote pollution prevention also support the Earth Summit's agenda which calls on countries to focus on

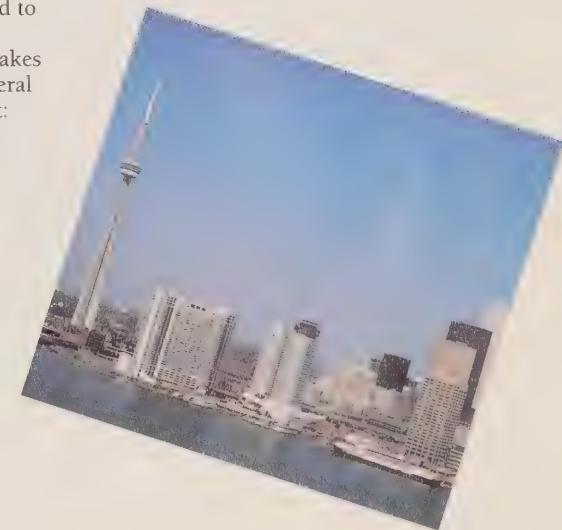
pollution minimization and prevention through the use of new technologies, product and process changes.

The legacy of past mistakes is also being cleaned up in the basin. In addition to the Pollution Prevention Initiative, the federal government's Great Lakes program includes the Great Lakes Action Plan, involving six federal departments, and joint endeavours by other government agencies, industry and local environmental groups. In the past two years, 33 Great Lakes cleanup projects have been started in the 17 designated Canadian Areas of Concern, and innovative remedial techniques for the contaminated sediments are being demonstrated and used.

Three are of particular note. In Hamilton Harbour, thermal destruction was used to treat contaminated sediments. In the Welland River, sediments contaminated with metals were removed by the use of an innovative suction dredge mounted on a barge. In the St. Mary's River, sediments were left in the water and treated to eliminate acute toxicity.

For more information on the Great Lakes Pollution Prevention Initiative and the federal strategy for the Great Lakes, please contact:

The Great Lakes Environment Office  
25 St. Clair Avenue East, 6th floor  
Toronto, Ontario M4T 1M2



## Friends of Wye Marsh



**I**n 1985, a group of residents near the Wye Marsh in Midland, Ontario, took it upon themselves to operate their Wildlife Centre as a not-for-profit organization. These "Friends of Wye Marsh" wanted to preserve this valuable wildlife source and now the centre boasts thousands of supporters.

With financial assistance from the Environmental Partners Fund and many other organizations, such as the Ontario Ministry of Natural Resources, World Wildlife Fund and Ducks Unlimited, the Friends have been able to make the Wye Marsh a more productive habitat.

Too many cattails present a homogeneous habitat which can be detrimental to wildlife. By constructing berms, installing water-control structures and fluctuating water levels, some of the cattail mat in the marsh has been eliminated.

The creation of more open water and edge habitat — necessary for wetland wildlife — helped to improve the quality of the marsh.

The rehabilitation of the wetland has also helped in the Trumpeter Swan recovery program. The swan nesting pond was renovated and nesting structures constructed. Several cygnets have been hatched and raised successfully.

Rehabilitating wetlands is a component of the *Green Plan's* National Wildlife Strategy and contributes to Canada's goal of establishing 12% of the country as protected space. These actions also support the Earth Summit's agenda, which asks countries to take action where necessary for the conservation of biological diversity.

For more information on the Friends of Wye Marsh, please contact:

Bob Whittam  
Executive Director  
Wye Marsh  
Midland, Ontario L4R 4K6

For more information on the National Wildlife Strategy, please contact:

Canadian Wildlife Service  
Environment Canada  
49 Camelot Drive  
Nepean, Ontario K1A 0H3



# Assessing Our Progress

**H**ow can Canadians measure the improvement of our environment brought about by the actions of individuals, industry and government? Furthermore, how can we measure the damage to the environment caused by human activities in much the same way as we measure economic activity? Through the *Green Plan*, Environment Canada and Statistics Canada will provide those measurements.

To many environmental analysts, established measures of economic activity such as the Gross Domestic Product (GDP) are inadequate. The conventional National Accounts are designed to measure market activities. As a result of this orientation, the accounts measure the "goods" but not the "bads". Fundamentally, the accounts do not give any measure of the sustainability of our use of the environment.

Statistics Canada is responding to this challenge by adding new "green" accounts to the existing National Accounts. Key elements of this effort include measuring the value of living and non-living natural resources, assessing the value of depletion of natural resources, detailed accounting of the flows of resources and emissions of pollutants by individual economic sectors, and measurement of expenditures on environmental protection.

Environment Canada's State of the Environment (SOE) Reporting organization is committed to providing Canadians with accurate, timely and accessible information about the state of the environment. To meet that commitment, SOE Reporting is working on the establishment of a long-term ecological monitoring and assessment capability to study resources at risk, ecosystem response and the impact of major disruptions to ecosystems. A national set of environmental indicators is also being developed that is understandable, scientifically credible and useful to both

decision-makers and the public. Indicators covering such issues as climate change, stratospheric ozone levels, urban air quality and the state of wildlife will be among the first to be released in a series of bulletins starting in 1993. To support these initiatives, work is under way to establish a national environmental information network to provide "one-window" access to environmental information.

Canada's State of the Environment Reporting system can serve as a model for countries attending the Earth Summit. Agenda 21 calls for countries to develop systems for monitoring and evaluation of progress towards achieving sustainable development including the adoption of environmental indicators.

For more information, please contact:  
National Accounts and Environment Division  
Statistics Canada  
Ottawa, Ontario K1A 0T6

State of the Environment Reporting  
Environment Canada  
Ottawa, Ontario K1A 0H3



# Assisting in the Development of Environmental Researchers



The environmental problems facing Canadians and the world are numerous. Depletion of the ozone layer, global warming, deforestation, coastal and inland soil erosion, and loss of biodiversity are just a few of the many examples now distressingly easy to find.

Canada needs highly skilled engineers and environmental scientists who can develop the technology necessary to tackle these problems. But this technology must have a conscience. It must be balanced with a knowledgeable appreciation of the social and cultural consequences of its use.

To tackle these issues, the Natural Sciences and Engineering Research Council of Canada, the Medical Research Council and the Social Sciences and Humanities Research Council established the Eco-Research Program under the *Green Plan*. It is designed to strengthen advanced Canadian research and training in environmental fields.

The formation of international partnerships is encouraged with the aim of fostering stronger alliances between industry, universities and governments. This program will generate knowledge that will contribute to the formation of improved environmental policies and practices and widely disseminate findings stemming from the research it supports.

The response to the program has been immediate. Since last fall, 125 teams made up of well over 1,000 researchers from more than 35 Canadian universities have submitted proposals for funding under the Research Grants component. The proposals include socio-economic studies of resource management, issues in the disposal of hospital waste, assessing industrial design and its impact on the environment, air quality and systems of urban transportation.

Other components of the program include research chairs and doctoral fellowships to support programs of study and research on environmental issues.

For more information, please contact:  
Tri-Council Secretariat  
255 Albert Street  
P.O. Box 1610  
Ottawa, Ontario K1P 6G4



## More Energy Efficient Homes

**M**anitoba Homebuilders Association of Winnipeg Manitoba will soon have a new house and it's a house with a difference. This house will use less than one quarter of the energy compared to a conventionally built new home.

Under the *Green Plan's* Advanced House Project from the Department of Energy, Mines and Resources, the Association's house and other prototype homes will feature energy-efficient technologies such as innovative heating, cooling and air-conditioning systems, high-performance windows, waste-water recovery and other advanced building practices and technologies.

Each house must meet strict environmental requirements including the use of EcoLogo products, no CFC's, 50% less water consumption, the use of building materials with recycled or recyclable contents, construction waste management and composting facilities.

Consideration has also been given to the energy embodied in construction material. Reclaimed materials are used wherever possible in the construction process, while maintaining quality and building integrity. Particular attention has been given to the use of recycled glass as an alternative to gravel.

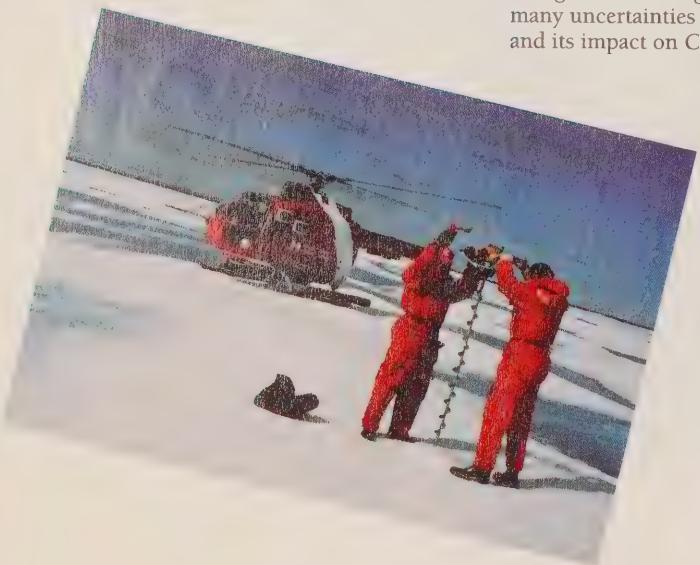
The design of the house and the utilities it uses comes from a consortium of private and public sector organizations — architects, builders, utilities, manufacturers, researchers — all working in partnership to build these innovative homes.

It's the home of the future, and consumers will have the opportunity to purchase one soon.

For more information, please contact:  
Advanced Houses Program  
Canada Centre for Mineral and Energy  
Technology (CANMET)  
Energy, Mines and Resources Canada  
Ottawa, Ontario K1A 0E4



# The Science of Global Warming



**B**arrie Atkinson was definitely thinking about global warming on that cold March day. Twenty kilometres from the native community of Nelson House, along Highway 391 in northern Manitoba, he was conducting a snow survey at a potential monitoring site for the BOREAS experiment.

BOREAS — the Boreal Ecosystem-Atmosphere Study, being undertaken jointly by Canadian and United States scientists — will provide a research base for a range of investigations on the interactions between the boreal forest and the atmosphere, especially in relation to climate change and potential changes in the energy, water and carbon cycles. Canadian participation in BOREAS, along with a number of other studies on global warming, is being carried out as part of Canada's *Green Plan*.

While scientists are in general agreement that global warming will occur, there remain many uncertainties as to its rate and magnitude and its impact on Canada and the world. Informa-

tion gained from studies like BOREAS can be used to improve the accuracy of large-scale and regional models of climate and climate change, and can lead to a reduction in those uncertainties and a better understanding of climate systems.

Canada is recognized by the world scientific community as having unique and important skills related to climate modelling, and outputs from early versions of Canadian models have been widely used by governments and other agencies abroad. As more sophisticated models are developed, based on our increased understanding of climate processes, the international, national and regional implications of climate change and its impact will become better understood.

As our knowledge gaps are reduced, policy makers, business people, community organizations and individual citizens of Canada and the world will be able to make more informed decisions as to how they can best contribute to sustaining the social and economic fabric of the world, while at the same time helping to protect the environment from the effects of global warming.

Science-based research is an agenda item for the Earth Summit and Canadian studies will support not only Canadian efforts on climate change but the work of other countries as well.

These things weighed heavily on Barrie's mind that morning. The silent, dark forest stretching in all directions from the survey site, is part of Canada's environmental heritage. We are blessed with having a large proportion of the world's boreal forest biome on our doorstep. The responsibility that comes with guardianship of this and our other valuable natural resources is fundamental to BOREAS and to Canada's strong commitment to action on global warming.

For more information, please contact:  
Atmospheric Environmental Service  
25 St. Clair Avenue East  
Toronto, Ontario M4T 1M2



## Tree Planting and Farming

**D**ave Bueckert of Tugaske, Saskatchewan, knows the benefits of planting trees. Dave is a mixed-grain-and-livestock producer and understands the dangers of soil erosion on the flat prairies. He's planting trees to create a "shelterbelt", a practice from the 1940s that promotes sustainable agriculture by reducing soil erosion and increasing crop yields.

Dust-bowl conditions on the land and hard economic times bring back memories of the "dirty thirties". Dave remembers that his parents' generation planted shelterbelts around their farms. He has seen the benefits. He's carrying on the tradition, his soil is retaining its moisture and his crops are enhanced as well. These miniature forests also provide food and shelter to wildlife.

The Prairie Farm Rehabilitation Administration (PFRA) was set up to deal with the dust bowl and financial assistance under the National Soil Conservation Program. It has meant a resurgence of tree planting, particularly in Saskatchewan and Manitoba. The Save our Soils (SOS) program in Saskatchewan was launched in 1989. In 1990 alone, 969 of the province's farmers planted 2,358 kilometres of field shelterbelts.

Depression-era farmers planted trees on blind faith and hope. Creating shelterbelts requires patience, as it is years before the benefits can be measured. Now, thanks to the PFRA, producers in western Canada can turn to their computer consoles and examine models and data to see a graphic demonstration of how tree planting can improve their production and their profits. The *Green Plan*Sustainable Agriculture Initiative focuses on soil conservation, water quality, wildlife habitat, energy use, pollution and waste.

Tree planting is also an initiative under the *Green Plan* from another government department, Forestry Canada. Up to 325,000,000 trees will be planted over the next six years across Canada through partnerships with communities, associations and individuals.

As well, the Earth Summit's Agenda 21 calls on countries to combat deforestation by expanding areas under forest and tree cover through various measures, including tree planting.

For more information on the Prairie Farm Rehabilitation Administration, contact:

PFRA  
Indian Head, Saskatchewan S0G 2K0

For information on Tree Plan Canada, telephone:

1-800-563-0202



# Canada's Ozone Layer Protection Program



**K**en Lamb has been around the world to help more than 25 countries measure the ozone layer protecting them from the sun's ultraviolet radiation. Ken is Vice-President of a small Canadian company, Sci-Tec, located in Saskatoon, Saskatchewan, which manufactures the Brewer spectrophotometer. The Brewer instrument uses sophisticated technology, and has the advantage of being able to take measurements without an operator present.

As scientific evidence of ozone layer depletion increases, more countries are interested in knowing about their situation. To ensure that data obtained are reliable, Canada operates a world reference triad of Brewer instruments in Downsview, Ontario, and has donated another instrument to the World Meteorological Organization for travelling inter-comparisons.

In Canada, Ken sees data from his company's instruments being used in OZONE WATCH bulletins, that were launched this past winter, to provide public information on the state of the ozone layer. As well, in the spring of 1992, Environment Canada began issuing a daily advisory on ultra-violet radiation levels so that Canadians could make individual and informed health decisions.

Under the *Green Plan*, the Canadian Brewer network will be expanded and a new Arctic Ozone Research Observatory will be set up in Eureka, Northwest Territories. An advanced research version of the spectrophotometer technology is to be used by Canadian astronaut Steve MacLean on the space shuttle later this year.

Informing Canadians of the state of the ozone layer is one component of Canada's Ozone Layer Protection Program. Federal and provincial governments have also agreed to phase out the production, import and export of CFCs — ozone-depleting substances — by December 31, 1995. Industries have responded to the ozone depletion threat by accelerating programs to find substitutes to CFCs. And governments are implementing CFC recovery and recycling initiatives.

For more information on ozone measurements, please contact:

Atmospheric Environment Service  
Environment Canada  
4905 Dufferin Avenue  
Downsview, Ontario M3H 5G4

For more information on programs to control ozone-depleting substances, please contact:  
Conservation & Protection  
Environment Canada  
4905 Dufferin Avenue  
Downsview, Ontario M3H 5G4



## A Wildlife Reserve and a Military Base

**I**n the mixed-grass prairie region of south-eastern Alberta, a portion of Canadian Forces Base Suffield has been set aside as Canada's 46th National Wildlife Area. It will protect, among other species, the Pronghorn Antelope, which once roamed the North American prairie in numbers comparable to the bison.

CFB Suffield contains one of the largest native mixed-grass prairie ecosystems remaining in Canada, as well as the Middle Sand Hills and an undisturbed portion of the South Saskatchewan River Valley. The diversity of land forms and habitat types, along with its undisturbed nature, make this 420-square kilometre portion of the base an excellent wildlife preserve.

As well as the Pronghorn Antelope, it is a prime habitat for the Prairie Rattler, White Tail Deer, Mule Deer and a number of endangered or threatened birds, including the Burrowing Owl, the Prairie Falcon, the Golden Eagle and the Baird's Sparrow.

Though one would not expect that one of the western world's largest military training areas would be the site of a wildlife reserve, the ecological value of the property has long been recognized and has been managed as a preserve since 1971. In that time Pronghorn Antelope populations in the area have increased from several hundred to over 4,000 today.

The official designation of the CFB Suffield National Wildlife Area is the result of an agreement between the Department of National Defence and Environment Canada's Canadian Wildlife Service. This partnership initiative contributes to Canada's *Green Plan* goal of securing a network of significant protected spaces and also the 12% protected spaces objective. It will ensure that this ecologically important area is preserved for future generations of Canadians.

For more information, contact:  
Department of National Defence  
Canadian Forces Base Suffield  
P.O. Box 6000  
Medicine Hat, Alberta T0J 2N0



# *Cleaning Up a Contaminated Site in Downtown Calgary*



**A**s residents of downtown Calgary looked on, workers dressed in hard hats, special suits, hip waders and at times respirators worked in gravel and sludge.

The site was the south bank of the Bow River which flows through downtown Calgary and which was the former home of the Canada Creosote Plant. The work, which was done in the fall of 1991, was a demonstration project to excavate and wash the creosote from the gravel in the river.

The demonstration project was carried out under the federal-provincial Contaminated Sites Remediation Program, a program set up to clean up "orphan" waste sites across the country.

Canada Creosote operated on the site from the early 1920s until urban growth forced it to move 40 years later. Left behind was land contaminated with hundreds of thousands of litres of creosote from unlined pits, railway car spills and sludge, which was carried by ground water into the Bow River.

Local engineering firms were hired to do the project and a Calgary consulting firm was designated as the project manager.

The work involved excavating gravel from a section of the riverbed, cleaning it and removing the creosote. The contaminated process water was put through a treatment facility especially built on the site for the project. Although the water was considered clean enough to return to the Bow River, it was trucked to a local sewage treatment facility.

While considerably more work is required at the Bow River site, projects like this demonstrate the federal government's commitment to work in partnership with other levels of government to clean up our mistakes of the past; and to promote the development and demonstration of new and innovative technologies in concert with local companies.

To date, nine agreements between the federal government and provinces/territories have been signed and clean-up work is under-way at 20 high-risk sites across the country.

The clean up and remediation of contaminated sites is a key objective of the *Green Plan's* National Waste Management Strategy.

For more information on the Alberta Program, please contact:

Conservation & Protection  
Environment Canada  
Twin Atria Building  
4999-98th Avenue  
Edmonton, Alberta T6B 2X3

For more information on the National Program, please contact:

Conservation & Protection  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



# Training for Our Environmental Protection Laws

**A** company has electrical transformers filled with Polychlorinated Biphenyls (PCBs) on site. Some are in use, others are stored. But one of the transformers in storage is leaking PCBs. The electrical maintenance foreman is dedicated to his work and is worried about this leak because the PCBs are draining directly into a nearby river from which the town takes its drinking water. His boss, the plant manager, knows about the leak but directs that the matter be covered up when an Environment Canada inspector drops by for a routine inspection.

This fictional scenario is the setting for a simulated investigation and later a mock courtroom trial that Environment Canada investigators were involved in recently in Banff, Alberta. It is part of their training program to enforce our environmental protection laws and regulations.

Environment Canada inspectors undergo three training exercises. The first is a general orientation for new employees on their roles and responsibilities in enforcing the Canadian Environmental Protection Act (CEPA) and the Fisheries Act. The second deals with specific regulations under those Acts, and the third deals with investigative techniques.

The investigative training exercise covers how to conduct investigations, gather evidence, interview witnesses, prepare courtroom briefs and to give testimony in court.

These training courses are held two to three times a year and outside experts are used in the teaching process. The experts come from a variety of institutions such as the British Columbia Attorney-General's Department, the Canadian Police College in Ottawa, judges who hear criminal cases, the Investigations and Enforcement Branch of the Ontario Ministry of the Environment and the Montréal Urban Community.

Under the *Green Plan*, more inspectors are being trained to ensure compliance with our federal environmental laws and regulations. As well, because the environment is a shared responsibility, federal-provincial agreements are being negotiated to allow joint enforcement of many regulations by both levels of government.

Canada's enforcement capability under our wildlife and parks laws has also been strengthened by the *Green Plan*. Modern computer and other communication equipment is being installed across the country so that Canadian Parks Service staff and the Royal Canadian Mounted Police can co-operate more fully.

For more information on Environment Canada's Enforcement and Training Program, please contact:

Office of Enforcement  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



# A Great River System Under Study



The communities of central and northern Alberta share a critical resource with their neighbours — the water in the Peace-Athabasca-Slave River Basin. The flow from this river basin subsequently joins with a number of other tributaries in the Northwest Territories to become the second largest river in North America, the Mackenzie. The Mackenzie itself is the lifeline for numerous communities in the Western Arctic.

Canada's *Green Plan* recognizes that development throughout the basin has long-term and cumulative consequences on the water and aquatic environment of the northern ecosystem.



For that reason, the Northern Rivers Basin Study was launched. Its objectives include providing a scientific information base for planning and managing the water resource, and developing models to assess the impact of development on water quality, fish and fish habitat, hydrology/hydraulics and the use of aquatic resources.

Native groups, community leaders, academics, health specialists, environmentalists, industry representatives and others are actively involved on the study board which was established to direct the project.

Activities relate to assessing winter flow conditions, dissolved oxygen conditions and contaminants in the water, sediments, fish and wildlife.

With support from three levels of government and a wide variety of interest groups, the Northern Rivers Basin Study is a working example of the partnership approach to investigating complex environmental issues.

For more information, please contact:  
The Northern Rivers Basin Study  
Standard Life Centre  
10405 Jasper Avenue  
Edmonton, Alberta, T5K 2J6



## Restoring the Fraser River

**R**estoring the Fraser River's salmon stocks to their historic levels of abundance is a priority goal under the Fraser River Action Plan. The Plan is being carried out by Fisheries and Oceans, Environment Canada and other partners in the basin.

Public consultations have established that the people who rely on the river — including fishermen, natives, loggers and others — want to increase the production of Fraser River salmon, prevent pollution from entering the river, and find ways that all groups can continue to enjoy the benefits of the river and its environment, without damaging the ability to meet future needs.

Among the activities under way is a study by the Department of Fisheries and Oceans and the Fort George Indian Band. The study to assess juvenile sockeye salmon in four northern lakes — Stuart, Takla, Trembleur and Fraser — will determine the number of sockeye that can be expected to return from the sea to spawn. It will also determine the optimum number of sockeye for each lake, so that potential enhancement possibilities can be investigated, and use this baseline data for monitoring the health of the lakes and their fish populations.

Another key project involves sustainable development practices in selected watersheds. The project will return resource decisions to those affected — residents, user groups, industry and governments.

Through the *Green Plan's* Fraser River Action Plan, the federal government is working closely with the province and with municipalities around the basin to introduce a sustainable development approach to managing this important resource.

For more information, please contact:  
Fisheries and Oceans Canada  
555 West Hastings Blvd.  
Vancouver, British Columbia V6B 5G3

Conservation & Protection  
Environment Canada  
224 West Esplanade Street  
North Vancouver, British Columbia V7M 3H7



# Fraser River Action Plan and Wetland Reclamation



**D**uck Meadow, a waterfowl and wildlife habitat along the highway between Vernon and Kamloops, has a new lease on life thanks to the efforts of conservationists and governments in British Columbia.

Historically, the water levels in Duck Meadow were controlled by Canada's native dam builder, the beaver. For more than a century, however, local ranchers have used Duck Meadow as a wild hay meadow and have been playing a large role in the alteration of water levels in the wetland. To facilitate the growth of hay, seasonal drainage of Duck Meadow has been carried out since the 1870s. More extensive dam construction and drainage ditching occurred in the 1930s and 1970s.

But in 1989, a local farmer decided to sell the 93-hectare property that encompasses Duck Meadow to the Nature Trust of British Columbia, the provincial Fish and Wildlife Branch and Ducks Unlimited Canada. Their goal was the restoration of the habitat to its former glory, and the Fraser River Action Plan under the *Green Plan* played a part in the restoration.

Duck Meadow was already being used by several species of ducks, and Canada Geese also use the wetland during their annual migrations. Restoration has brought a significant increase in the number and variety of species that choose the wetland for breeding.

But it's not only waterfowl that use Duck Meadow. There is evidence that coyotes, black bears, mule deer, various squirrels and muskrat also use the wetland.

Wildlife viewing opportunities have been enhanced by the restoration. Due to its easy accessibility along the highway, it is not unreasonable to expect that Duck Meadow will play host to 20,000 visitors a year, including visiting schools and naturalist clubs.

For more information on the Duck Meadow restoration, please contact:

Ducks Unlimited Canada  
954-A Laval Crescent  
Kamloops, British Columbia V2C 5P5

For more information on the Fraser River Action Plan, please contact:

Conservation & Protection  
Environment Canada  
224 West Esplanade Street  
North Vancouver, British Columbia V7M 3H7



## Preventing Oil Spills

**R**ichard Lucas of the Nuu-chah-nulth Tribal Council on the west coast of Vancouver Island knows the danger from oil spills off the west coast. The 1988 NUSTUCCA oil spill threatened the very livelihood of native people dependent upon the natural food resource of the sea-shore.

Vancouver Island is steeped in maritime history and rich in biological resources. Its vast coastal network of inlets and bays shelters an abundance of breeding sea birds, various species of salmon, groundfish and shellfish, killer whales and other marine mammals. It is also a mecca for sports enthusiasts and tourists and supports a flourishing fishing industry.

With an extensive fleet of tankers and barges plying the waters surrounding this fertile natural habitat, public concern about the potential environmental hazards associated with the transportation of oil by sea is not surprising.

The *Green Plan*'s Environmental Emergencies Response and Prevention Initiative is being implemented to protect not only the coastline of Vancouver Island but all of the west and east coasts, the St. Lawrence River and the Great Lakes, the Arctic and the Mackenzie River system. The Canadian Coast Guard (Transport Canada), Environment Canada and Fisheries and Oceans Canada all have a role to play in implementing this Initiative.

Under the program, all foreign tankers are now inspected on their first visit each year to a Canadian port and additional fixed-wing aircraft have been added to the Canadian Coast Guard's aerial surveillance fleet. For the west coast in particular, vessel traffic services radar coverage at the seaward entrance to Juan de Fuca Strait is being upgraded.

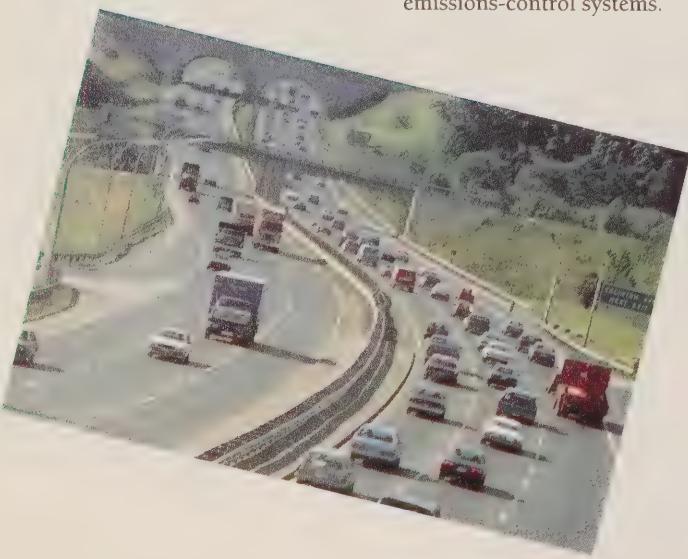
Should an oil spill occur, the Coast Guard is ready with additional equipment such as skimmers, booms and response trailers and vessels. Coast Guard vessels are also equipped with adequate spill response equipment.

Federal and provincial agencies in British Columbia are also working together to map environmentally sensitive maritime areas. And in the spirit of partnership, which is central to implementation of the *Green Plan*, the Nuu-chah-nulth Tribal Council has agreed to provide supervised crews to clean up shorelines on the west coast of Vancouver Island as required.

For more information, please contact:  
Canadian Coast Guard  
Transport Canada  
344 Slater Street  
Ottawa, Ontario K1A 0N7



## Reducing Urban Smog



Jan Pezzaro, with British Columbia Transit in Vancouver, has been actively working to remove smog from Vancouver's air for years. Jan has been the driving force behind the "Go Green" campaign currently under way in the lower mainland of British Columbia.

"Go Green" is a public education campaign, designed to discourage single-occupancy car use by promoting other means of transportation, such as public transit, car pooling and high-occupancy vehicle lanes. One of the campaign's aims is to reduce ground-level ozone, better known as urban smog. Meanwhile, the British Columbia government is implementing mandatory vehicle emissions testing starting late in 1992 under its Air Care Program. As well, for licence renewals, all light-duty vehicles in the province's lower mainland will be inspected for exhaust emissions and emissions-control systems.

Other municipalities are gearing up to reduce their own smog levels. In the Regional Municipality of Ottawa-Carleton, a Transportation Environmental Action Plan has been developed that encourages the use of public transit, cycling and walking, while discouraging single-occupancy vehicle use. In Calgary a novel program has been initiated called "Smog Free". It tests vehicles for emissions at automobile service centres and hands out a free estimate showing emissions savings obtained through proper engine tuning. Discount coupons called "Smog-Free Bucks" are provided that encourage future car repairs to reduce emissions.

Motor vehicle manufacturers also recognize the serious problem and have agreed to implement stringent new vehicle emission standards in the 1996 model year. Automobile exhaust is a major contributor to smog, but not the only one. The Montréal Urban Community, through the implementation of regulations, has achieved substantial reductions in emissions from dry cleaning and printing facilities, surface-coating applications and metal-degreasing operations.

Canadian governments have recognized the serious problem posed to human health and agriculture from ground-level ozone. In 1988, the federal, provincial and territorial governments working together through the Canadian Council of Ministers of the Environment initiated work on an action plan to combat urban smog throughout the country. That action plan was endorsed by governments in 1990. Canada's *Green Plan* is following through on the commitments in that action plan through the implementation of regulations, control strategies, and public education.

For further information, please contact:

Industrial Programs Branch  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3



# The Arctic Environmental Strategy

Canada's North has long been known for its beauty and pristine nature, but only recently have people recognized the seriousness of environmental problems facing the lands, waters, forests, wildlife and the traditional way of life.

The Arctic Environmental Strategy (AES) was created under the *Green Plan* to meet those concerns, and since April 1991, much has been accomplished because of the active partnership between the various levels of government and Northerners.

In assessing the level and types of contaminants in the North, 47 separate studies by federal and territorial government departments and universities are currently underway. For example, in the Yukon, First Nations and federal officials are working together to determine the extent and magnitude of chemical contaminants in fish in Yukon rivers and lakes such as Atlin Lake and Lake Laberge. Recognizing that some of the pollutants in the North come from distant sources, Canada is also playing a leading role in the international agreements to conserve Arctic fauna and flora, reduce airborne contaminants and to enhance circumpolar co-operation on protection of the Arctic environment.

Work has also started throughout the North to clean up the legacy of abandoned wastes. Priority is on the clean up of wastes which are hazardous to people, wildlife or the environment. Most northern communities have also been involved in non-hazardous clean-up activities.

Expanded water quality and quantity monitoring is another priority of the AES. Thirty-six new stations have been put in place in the North and priority areas for future expansion are being determined. Plans are being developed for the construction of a new water laboratory in Whitehorse.

To integrate new economic growth in the North with environmental integrity and the traditional reliance on the land, more than 100 local projects are under way. Some of the projects include: the recycling of paper, plastic and metals; the development of community nature trails; community clean-up programs; and management of the Isabella Bay bowhead whales.

For more information on the Arctic Environmental Strategy, please contact the Department of Indian Affairs and Northern Development:

P.O. Box 1500  
Yellowknife, N.W.T. X1A 2R3

200 Range Road  
Whitehorse, Yukon Y1A 3V1

10 Wellington Street  
Hull, Québec K1A 0H3



# A New Park in the Far North



**D**avid Pitsoalik and Harry Eyerak know the importance of protecting the fragile Arctic landscape and its wildlife. Together with other residents of traditional Inuit communities in Canada's eastern Arctic, they have supported efforts to establish a new national park on the northern tip of Baffin Island, at the entrance to the Northwest Passage.

David, of Pond Inlet, and Harry, of Arctic Bay, travelled some 1,200 kilometres south to Iqaluit in April to hear the news that 22,000 square kilometres of spectacular lands in the North Baffin area have been set aside for a proposed new national park.



The *Green Plan* commits the federal government to completing the national parks system by the year 2000 so that examples of all of Canada's natural regions are protected.

The proposed new park will cover three separate land areas — Bylot Island, the lands around and including Oliver Sound, and part of the Borden Peninsula. Pond Inlet and Arctic Bay are the nearest communities.

In planning visitor programs and facilities for the park, Environment Canada is paying attention to the realities of weather, wildlife and the fragile Arctic environment. There will be opportunities such as nature viewing, natural and cultural history interpretation, hiking, cross-country skiing, mountain climbing and boat touring.

The national park on North Baffin Island will bring to 35 the number of national parks and national park reserves across the country. There is at least one in each province and territory.

Efforts by the federal, provincial and territorial governments, together with many interested groups, brings Canada closer to its *Green Plan* goal of setting aside 12% of its land as protected space. Canada's commitment also supports international efforts to promote biodiversity.

For more information about national parks in Canada's eastern Arctic, please contact the Canadian Parks Service in:

Auyuittuq National Park Reserve  
Panqnirtung, N.W.T. X0A 0R0  
or  
25 Eddy Street  
Hull, Québec K1A 0H3



# Canadian and Multilateral Efforts Gaining Ground in Cleaning up Global CFCs

John Smale, an engineer with Environment Canada, is an active player in world efforts to clean up and eliminate ozone-depleting substances. His solid expertise in recovering and recycling CFCs in refrigeration and air-conditioning equipment has earned him a reputation as one of the architects of the National Action Plan for Recovery, Recycling and Reclamation of Chlorofluorocarbons (CFCs,) endorsed in 1992 by the Canadian Council of Ministers of the Environment.

John also provides coast-to-coast advice to provincial agencies and private companies on how to establish regulatory programs to control CFCs. He creates specialized training programs for trade people, colleagues and technical schools and hold seminars.

The drive to eliminate the use of CFCs, and to ensure that their phase-out is handled in an environmentally safe manner, is backed up by the Canadian Council of Ministers of the Environment which recently pushed forward to the end of 1995 the phase-out date for production and export of CFCs. Already, CFC consumption in Canada is down 45% from 1986, well ahead of the International Protocol on Substances that Deplete the Ozone Layer, better known as the Montréal Protocol. Under the *Green Plan*, new regulations to meet the new phase-out dates will be implemented.

Meanwhile, developing countries are also taking action. Some, such as Malaysia, are way ahead in their efforts to reduce the use of CFCs. There is help for developing countries under the Multilateral Fund, headquartered in Montréal. Malaysia will begin two projects this year. The first deals with conservation and leakage control and recycling CFCs from refrigerants and mobile air conditioners. The second focuses on servicing, maintenance and recovery of portable fire extinguishers containing Halons.

Canada played a role in the creation of the Multilateral Fund. It now totals \$200 million, and Canada has pledged a total of \$13 million over a three-year period, including support for developing countries and the Secretariat.

For more information on Canada's domestic program and on the Multilateral Fund, please contact:

Chemical Control Division  
Environment Canada  
351 St. Joseph Blvd.  
Hull, Québec K1A 0H3





## CANADA'S GREEN PLAN

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For more information on Canada's *Green Plan*, please contact:  
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Ottawa, Ontario  
K1A 0H3  
Telephone: 1 (800) 668-6767



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